Word square   P82111_en

A *word square of order k* is a matrix of $k \times k$ letters in form that in each row and in each column a word of the dictionary appears and that the same words are read horizontally and vertically. For instance, below some word squares of order three to eight are given:

```
B I T     C A R D     H E A R T     G A R T E R     B R A V A D O     L A T E R A L S
I C E     A R E A     E M B E R     A V E R S E     R E N A M E D     A X O N E M A L
T E N     R E A R     A B U S E     R E C I T E     A N A L O G Y     T O E P L A T E
          D A R T     R E S I N     T R I B A L     V A L U E R S     E N P L A N E D
                      T R E N D     E S T A T E     A M O E B A S     R E L A N D E D
                                    R E E L E D     D E G R A D E     A M A N D I N E
                                                    O D Y S S E Y     L A T E E N E R
                                                                      S L E D D E R S
```

Write a program that reads a dictionary and prints if various matrices of characters are or are not word squares.

Input

Input has two parts:

- The first part is a dictionary of *n* words. First, the value of *n* is given. Then, *n* words of the dictionary (all in uppercase letters) come in lexicographical order.

- The second part is various matrices of characters. Each matrix starts with an integer *k* that indicates the number of rows and columns and continues with k^2 characters (all uppercase letters) arranged in *k* rows and *k* columns. The value $k = 0$ indicates the end on the input.

Output

For each matrix of the input, print "YES" if forms a word square using some of the dictionary words and must print "NO" otherwise.

Observation

In private test data is used a dictionary derived from @/usr/share/dict/words@ with four hundred thousand words and a thousand of matrices are tested.

Sample input 1

```
10
AREA BETTER BIT CARD DART HELLO ICE REAR TEN THE

3
BIT
ICE
TEN

4
CARD
AREA
REAR
DART

3
THE
HIS
ESA

3
THE
THE
THE

0
```

Sample output 1

```
YES
YES
NO
NO
```

Problem information

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